Received: 2 December, 2011

Mozambique National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2011

NOVEMBER, 2011

Barbara Palha de Sousa

Instituto Nacional de Investigaçao Pesqueira

Information on Fisheries, Research and Statistics

Final scientific data for the previous year was provided to the secretariat by the 30th June 2011	The country has only foreign fleet
Final longline data for the previous year is due to the secretariat by 30th December 2010	The country has only foreign fleet

Executive Summary

Purse seine and long line are the two main fishing techniques used in Mozambique in the tuna fishery. Those activities are undertaken by distant water fishing fleets, which operate in the EEZ as from 12 nautical miles off shore from January to December.

Purse seine fishing occurs mainly between the parallels 10º 32' and 20º south. The purse seine fleet is composed of vessels from France, Spain and Seychelles. Long line fishing occurs between 20º and 26º 52' south, with particular intensity below parallel 25º south. For the purse seine fleet, the peak period of fishing activities occurs between March and June. The longline fleet operates from January to December in Mozambique waters and the peak period is from December to February. During the last 5 years, the longline fleet was composed of vessels from Belize, Panama, Cambodia, Honduras, Japan, China, Korea, Spain and Taiwan. The fishery employs only foreign labour. The catches are conserved on board and transferred to cargo reefer ships or unloaded at foreign ports, mainly Seychelles, Madagascar, Mauritius and South Africa. The tuna fleet never calls to a Mozambican port for landing catches in Mozambique but call for pre-fishing briefing and inspection (Japan fleet).

Over the last 10 years, the total catch in Mozambique waters ranges from 948 to 17.470 tonnes per year (Lichucha *et al.*, 2004). For the period 2005 / 2010, 264 licenses and 486 licenses were issued respectively to purse seine vessels and longline vessels, giving an average of 125 tuna licenses issued per year. The number of longline vessels operating in Mozambique EEZ has declined substantially since 2007. In 2010, a total of 31 fishing companies were authorized to fish large pelagic species.

1. Background / general fishery information

Mozambique is located in the southeastern coast of Africa, between latitudes 10°20' S and 26°50' S. The coastline is about 2,780 km long a total marine area of 1,380,576 km2 which includes the territorial sea and the Exclusive Economic Zone (EEZ).. There are three main shelves with high ecological value: The Delagoa Bight, in the south, Sofala Bank, in the centre and São Lázaro Bank, in the north. The climate is tropical humid with two distinct seasons: the dry season or winter and the rainy season or summer. The annual average atmospheric temperature is about 23^{o} C and 26^{o} C for the coastal zones of southern and northern Mozambique (Hoguane, 2007). The Mozambique Channel separates Mozambique from the island of Madagascar, which is 400 km wide at its narrowest point. The continental shelf averages 15 to 25 km in width, however it can be as narrow as 100 m (off Pemba in northern Mozambique), and wide to 145 km (Sofala Bank) in the central stretches of the coastline. The distribution and abundance of the living aquatic resources, as well as the fishing methods used to exploit them, are largely dependent on the physical characteristics of the coast.

Fisheries play an important role in the Mozambican economy, both for subsistence, income and food security of coastal fishing communities. There are three main fishing sectors: industrial (15% of the registered catch), semi-industrial (5%) and artisanal/subsistence (80%). About 350,000 people are believed to be directly or indirectly involved in artisanal fisheries, 135529 fishers using boats, 144511 fishers without boat and the remain have other kind of fishing activities. Fishery products accounted for 2-3% of GDP (2009-2010). Prawns scored as the third largest national export commodity, earning US$70 million. All fisheries are regulated through the 1990 Fisheries Act and the extensive 2003 Marine Fisheries Regulations, and subsidiary decrees.

The Ministry of Fisheries has different bodies but manage the fishery sector through the National Fisheries Administration (ADNAP). In 1996, a Fisheries Administration Commission (CAP) was established to improve the involvement of the private sector and fishing communities in management decision making. It congregates representatives of the Fisheries Public Administration and of the fishing industry (industrial, semi-industrial and artisanal fisheries associations). This forum is an advisory body to the Minister and discusses and analyzes issues such as quota, vessels allocations and regional and international matters.

The management regime of the tuna fishery is still under development and complying with international and national regulations. For tuna, the main management tool is the issue of fishing licenses. Alongside the application of Mozambique's membership to IOTC, a tuna fishery development plan has been drafted for the past two years.

2. Fishing licenses

For the period 2005 - 2010, a total of 264 fishing licenses to purse seine vessels and 486 fishing licenses to longline vessels were issued, giving an average of 125 tuna licenses issued per year by the National Fisheries Administration.

Table 1. Number of fishing licenses issued per year and by distant water fishing nation for the Mozambican EEZ during 2005 to 2010 (Source: ADNAP annual reports).

	Purse seine		Longline	
Year	No licenses	Flag country	No licenses	Flag country
2005	44	France, Seychelles, Spain, Italy	99	Portugal, Taiwan, China, Spain, Indonesia, Korea, Georgia, Madagascar, Philippines, Japan
2006	47	France, Seychelles, Spain, Italy	95	Portugal, Taiwan, China, Spain, Indonesia, Korea, Georgia, Philippines, Japan
2007	51	France, Seychelles, Spain, Italy, Indonesia	110	Spain, Japan, Korea, Indonesia, China, Taiwan, Georgia
2008	47	France, Seychelles, Spain , Italy	75	Portugal, Spain, Korea, Philippines, Japan, UK
2009	41	France, Seychelles, Spain, Italy	70	Portugal, China, Spain, Korea, Philippines, Japan
2010	34	France, Seychelles, Spain, Italy	37	Portugal, China, Spain, Korea, Japan, Namibia, UK

For the period 2005-2010, the number of fishing licenses issued to purse seine vessels operating in Mozambican waters ranged from 34 to 51 vessels with a flat trend (table 1). For the longline vessels, the number of fishing licenses ranged from 37 to 110 with a decreasing trend since 2008, probably due to security concerns in the western Indian ocean region.

In 2010, fishing licenses were issued for France, Spain, Seychelles and Italy purse seiners. For the longline fleet, licenses were issued for the following countries: Portugal, China, Spain, Korea, Japan, Namibia and UK. Thirteen companies were authorized to fish large pelagic species in the purse seine fleet, while in the longline fleet, 18 fishing companies were authorized to fish IOTC species.

3. Catch and effort (by species and gear)

All fishing vessels - foreign fleet

Table 2. Number of fishing vessels and annual catch per primary species, for the Mozambican waters from 2004 to 2010 (Source: ADNAP annual reports).

Year	No vessels	Skipjack	Albacore tuna	Bigeye tuna	Yellowfin tuna	Swordfish	Black marlin	Tuna	Total
2004									17470
2005	143								5629
2006	142								6668
2007	161	641	541	350	3402	218	1	428	5581
2008	122	2550	341	322	2647	209	9	471	6549
2009	111	1942	106	173	824	721	9	538	4313
2010[2]	71	764	99	166	1267	600	27	603	3909[3]

2 The 2010 catch data are not complete, the EU tuna fleet catch figures were not included
3 Striped Marlin 16 tonnes, Sailfish 5 tonnes, Sharks 291 tonnes

Purse seine fleet

Part of the fishing effort is concentrated at the eastern boundary limit of the Mozambique EEZ. The composition of catch in the purse seine fleet is about two thirds of the catch for skipjack (and a little less than one third for yellow-fin tuna.

Longline fleet

The fishing effort for the longline fleet concentrates in the southern part of the Mozambican EEZ and during the month of December, January and February. From 1993 to 2003 the longline catch has been fluctuating from 300.000 to 450.000 fishes per year.

4. Fleet structure

The number of longline vessels operating in Mozambique EEZ has declined substantially since 2007 (110 vessels licensed). There were 37 vessels operating in 2010 (table 2). The highest number of licenses was given to Japan (14), followed by Spain (9 - under the EU/Mozambique Fishery Partnership Agreements). Asian type longline vessels ranged in length from 48 to 51 m and a gross registered tonnage (GRT) ranging between 379 and 441. EU type longliners ranged

in length from 24 to 41 m and GRT between 198 to 593. The foreign purse seine fleet has fluctuated from 34–51 vessels from 2005 to 2010. The length of the purse seine vessels vary from 66 to 101 m with GRT ranging from 2110 to 4406.

5. Implementation of scientific committee recommendations

Not yet applicable . Mozambique has not been a full member of IOTC

6. Ecosystem and bycatch issues

No information available.

7. National data collection and processing systems

Logbook data collection and verification is carried out by Fisheries Administration of Mozambique since 2001. The logbooks filled by EU vessels has been received through the EU commission in Mozambique, however this has not always been the case for some vessels. The other foreign fleets outside of the FPAs send logbooks directly to the Fisheries Administration. It is expected that this system will gradually improve with the current investments in monitoring control and surveillance and Mozambique's integration with the regional RFMO's and bilateral cooperation.

8. Vessel Monitoring System (including date commenced and status of implementation)

Vessel Monitoring System commenced this year and is currently operational.

9. Scientific Observer programme (including date commenced and status; number of observer, include percentage coverage by gear type)

Scientific Observer programme has only been carried out in the shrimp trawling vessels. The coverage of the longliners has not yet been undertaken so far due to landings outside the country. Mozambique's commitment with IOTC initiatives in this field will improve the ability of the country to carried out scientific monitoring of tuna.

10. Port sampling programme (including date commenced and status of implementation)

Not in place due to the fact that vessels are landing outside Mozambique.

11. Unloading/Transhipment (including date commenced and status of implementation)

No information available.

12. National Research Programs

The Fisheries Research Institute (IIP), under the Ministry of Fisheries, has the responsibility for undertaking research in fisheries related issues as well as the aquatic environment and aquaculture. The IIP does not possess a research vessel, but several demersal and oceanographic research surveys have been undertaken in the context of cooperation with fishing industry and with countries such as Norway, Soviet Union, German Democratic Republic, Portugal and others. Between 1976 and 1979, several programmes were implemented to develop the tuna fishery using the longline and pole and line fishing techniques. The results of those programmes are described in (Simões 1984).

Several attempts were made at developing a national tuna fishery, which involved experimental fishing to determine catch rates for both longline and pole and line gears (Simões 1984). Between 1976 and 1979, experimental longline fishing was carried out using 7 research vessels from the Soviet Union. Catch rates were generally good and higher in the north (north of Quelimane) and during the winter, except in the central region. The tuna species caught were predominantly yellowfin tuna (*Thunnus albacares*) and to a lesser extent bigeye (*Thunnus obesus*) and albacore tuna (*Thunnus alalunga*). Overall, billfishes contributed with about 8 percent of the catches and sharks were abundant particularly in the south (south of Inhambane).
Based on these results, Simões (1984) considers that a national longline fleet of 5 to 7 vessels is feasible. Each vessel would be expected to catch around 3,500 tonnes per year; 1,100 tonnes of tuna, 1,900 tonnes of shark and 500 tonnes of others, mainly billfish. The estimated catch of such a fleet would be from 17,500 to 24,500 tonnes per year. Experimental fishing with bait boat was carried out in 1983, involving a chartered vessel from Cape Verde. Four surveys were undertaken with a progressive improvement in performance as a result of adaptations and training of the Mozambican and Capeverdean crew.

Actually, there is no available information on tuna potential but through SWIOFP project component 4 it is expected to have updated data on this resource.

13. Recreational fishery

Recreational fishing activities are regulated by the Decree 51/99 “Regulation of recreational and sport fishing”. The regulation provides a complete set of monitoring and control tools and measure to manage the activity: issue of license, authorized gears, prohibited gear, authorized species, protected species, catch limit, fishing zone. Since 2000, with the development of the tourism industry, sport fishing has also developed, targeting billfish, mainly marlin and sailfish. Sport fishermen keeping trophy of billfish are subject to pay an additional taxes. To date, the catch reporting system for the sport fishing is not operational in all sports fishing events; the Fisheries Research Institute has had some involvement in catch and species composition recording to feed into line fishery regular stock assessments (Table 3).

Table 3. Total catches (Kg) of tuna and marlin from sports fishing events from 2005 to 2010 as collected by the Fisheries Research Institute.

Catch per year	2005	2006	2007	2008	2009	2010	Total
Species caught							
Allothunus falai					42		**42**
Auxis thazard					26		**26**
Euthynnus affinis					969	86	**1054**
Katsuwonus pelamis					41	37	**78**
Thunus albacares	196	912	295	1122	1394	287	**4206**
Makaira indica					218	361	**579**

14. Sharks

The shark catches are not split by species. Annual total catches from 2006 to 2010 ranged from 63 to 482 tonnes.

Finning, the practice of removing only the fins from the sharks and discarding the remainder of the shark at sea is strictly prohibited. However, the lack of compliance by most fishing vessels that land their catch in Mozambique, hinders any attempt at obtaining reliable shark species composition by the fisheries authorities. There are a number of attempts to curb this problem by the Mozambican authorities.

In line with IOTC Resolution 05/05 concerning the conservation of sharks caught in association with fisheries managed by IOTC, fishing vessels must not have onboard fins that total more than 5 % of the weight of sharks onboard, up to the first point of landing. The discard of any target species caught during the fishing operation is strictly prohibited.

15. Protected species

15.1 Marine turtles

The release of marine turtle, dugong, whales and dolphins caught accidentally during fishing operations is mandatory. All dead animal must be kept on board and reported to ADNAP within not more than 12 hours.

There is a Mozambique Marine Turtle Monitoring and Tagging Program since 2003, which main aim is to monitor marine turtles both nesting females and those accidentally caught, develop and implement a national tagging system.

15.2 Sea birds

Sea birds are not reported in Mozambique.

16. PROGRESS OF NATIONAL RESEARCH PROGRAM UNDER SWIOFP FISHERIES PROJECT IN MOZAMBIQUE

The South West Indian Ocean Project (SWIOFP) is a World Bank – Global Environmental Facility (GEF) initiative whose objective is to promote environmentally sustainable use of fisheries resources of the South West Indian Ocean coastal riparian countries. These are Kenya, Tanzania, Mozambique, South Africa, Madagascar, Comoros, France (Reunion), Mauritius and Seychelles. The focus of the project is offshore ocean fisheries resources in the Exclusive Economic Zones of the participating countries.

There are different components in this project but the component 4 goal is Assessment and sustainable utilization of pelagic fisheries. This component expects to assess the stock dynamics of large, small, and mesopelagic species and develop strategies to optimize small and large scale pelagic fisheries. Activities will include ship-based surveys to assess the potential of new and existing pelagic fisheries, studies on migration and movement of selected large pelagic species (including sharks). Baseline assessment of pelagic stocks and fisheries will be undertaken in the EEZs of all nine SWIOFP countries. This component is coordinated by the Seychelles and is jointly implemented with the co-financing from France.

References

Hoguane, A. (2007) Perfil Diagnóstico da Zona Costeira de Moçambique. Revista de Gestão Costeira integrada 7(1):69-82 (2007).

Lichucha, I. *et al.* (2004) Profile of the Fisheries Sector in Mozambique: with emphasis on tuna fisheries.